



General

Guideline Title

Best evidence statement (BEST). Allergy testing and immunotherapy administration.

Bibliographic Source(s)

Cincinnati Children's Hospital Medical Center. Best evidence statement (BEST). Allergy testing and immunotherapy administration. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2013 Apr 8. 5 p. [12 references]

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

The strength of the recommendation (strongly recommended, recommended, or no recommendation) and the quality of the evidence (1a to 5b) are defined at the end of the "Major Recommendations" field.

1. It is recommended that allergen extracts and immunotherapy vials remain at a temperature of 4 degrees Celsius when not in use, to maintain potency (Moore et al., 2010 [4a]; Nelson, Ikle, & Buchmeier, 1996 [4a]; Grier et al., 2001 [5a]).
2. It is recommended that health care providers use a standard skin prick testing technique (e.g., placement, distance, timing) to increase testing accuracy (Nelson, Knoetzer, & Bucher, 1996 [4a]; Seibert et al., 2011 [4a]; Bernstein et al., 2008 [5a]; Bernstein & Storms, 1995 [5a]; Bousquet et al., 2012 [5a]; Nelson, 2001 [5a]; Nolte et al., 2012 [5a]; Oppenheimer & Nelson, 2006 [5a]; Dolen, 2001 [5b]).
Note: Areas for standardized placement include the volar area of the forearm or back at least 2 centimeters apart with results read 15 to 20 minutes post-placement (Bernstein et al., 2008 [5a]; Bernstein & Storms, 1995 [5a]; Bousquet et al., 2012 [5a]; Dolen, 2001 [5b]; Nelson, 2001 [5a]; Nelson, Knoetzer, & Bucher, 1996 [4a]; Nolte et al., 2012 [5a]; Oppenheimer & Nelson, 2006 [5a]; Seibert et al., 2011 [4a]).

Definitions:

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain

Quality Level	Definition
5a or 5b	General review, expert opinion, case report, consensus report, or guideline
5	Local Consensus

†a = good quality study; b = lesser quality study

Table of Language and Definitions for Recommendation Strength

Language for Strength	Definition
<p>It is strongly recommended that...</p> <p>It is strongly recommended that... not...</p>	<p>When the dimensions for judging the strength of the evidence are applied, there is high support that benefits clearly outweigh risks and burdens (or visa-versa for negative recommendations).</p>
<p>It is recommended that...</p> <p>It is recommended that... not...</p>	<p>When the dimensions for judging the strength of the evidence are applied, there is moderate support that benefits are closely balanced with risks and burdens.</p>
<p>There is insufficient evidence and a lack of consensus to make a recommendation...</p>	

Note: See the original guideline document for the dimensions used for judging the strength of the recommendation.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Allergy

Guideline Category

Management

Prevention

Treatment

Clinical Specialty

Allergy and Immunology

Family Practice

Pediatrics

Intended Users

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians

Guideline Objective(s)

To evaluate, among outpatient health care providers administering allergy testing and immunotherapy in an outpatient setting, if storage of extracts or technique of administration affects extract strength and testing accuracy

Target Population

Outpatient health care providers handling immunotherapy vials and administering allergy testing

Note: The recommendations do not apply to outpatient health care providers whose practice is related to allergy treatment and testing, food challenges, intradermal testing, and treatment and testing other than allergy.

Interventions and Practices Considered

1. Storage of allergen extracts and immunotherapy vials at 4 degrees Celsius
2. Standard skin prick testing technique

Major Outcomes Considered

- Extract strength
- Testing accuracy

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Search Strategy

Databases: PubMed; Medline, Ovid: Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Cochrane Library, MD Consult, Mosby's, Up to Date, Google Scholar

Websites: American Academy of Allergy, Asthma and Immunology (AAAAI); American College of Allergy, Asthma, and Immunology (ACAAI); Joint Council of Allergy, Asthma & Immunology (JCAAI); Greer Laboratories; Hollister-Stier Laboratories

Search Terms: Allergy, skin testing, extract storage, testing protocols, testing, well maintenance, well storage; reliable, allergy testing, skin prick testing techniques; valid allergy testing, variables in allergy testing; prick testing, prick testing protocol, prick testing techniques; SPT in allergy, protocol, techniques

Limit, Filters, Search Dates: English language 1990 to present

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5a or 5b	General review, expert opinion, case report, consensus report, or guideline
5	Local Consensus

†a = good quality study; b = lesser quality study

Methods Used to Analyze the Evidence

Systematic Review

Description of the Methods Used to Analyze the Evidence

Not stated

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Not stated

Rating Scheme for the Strength of the Recommendations

Table of Language and Definitions for Recommendation Strength

Strength	Definition
It is strongly recommended that...	When the dimensions for judging the strength of the evidence are applied, there is high support that benefits clearly outweigh risks and burdens (or visa-versa for negative recommendations).

Strength	Definition
It is strongly recommended that... not...	
It is recommended that... It is recommended that... not...	When the dimensions for judging the strength of the evidence are applied, there is moderate support that benefits are closely balanced with risks and burdens.
There is insufficient evidence and a lack of consensus to make a recommendation...	

Note: See the original guideline document for the dimensions used for judging the strength of the recommendation.

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Peer Review

Description of Method of Guideline Validation

This Best Evidence Statement has been reviewed against quality criteria by two independent reviewers from the Cincinnati Children's Hospital Medical Center (CCHMC) Evidence Collaboration.

Evidence Supporting the Recommendations

References Supporting the Recommendations

Bernstein IL, Li JT, Bernstein DI, Hamilton R, Spector SL, Tan R, Sicherer S, Golden DB, Khan DA, Nicklas RA, Portnoy JM, Blessing-Moore J, Cox L, Lang DM, Oppenheimer J, Randolph CC, Schuller DE, Tilles SA, Wallace DV, Levetin E, Weber R, American Academy of Allergy, Asthma and Immunology, American College of Allergy, Asthma and Immunology. Allergy diagnostic testing: an updated practice parameter. *Ann Allergy Asthma Immunol*. 2008 Mar;100(3 Suppl 3):S66-S121. [1176 references] [PubMed](#)

Bernstein IL, Storms WW. Practice parameters for allergy diagnostic testing. Joint Task Force on Practice Parameters for the Diagnosis and Treatment of Asthma. The American Academy of Allergy, Asthma and Immunology and the American College of Allergy, Asthma and Immunology. *Ann Allergy Asthma Immunol*. 1995 Dec;75(6 Pt 2):543-625. [PubMed](#)

Bousquet J, Heinzerling L, Bachert C, Papadopoulos NG, Bousquet PJ, Burney PG, Canonica GW, Carlsen KH, Cox L, Haahtela T, Lodrup Carlsen KC, Price D, Samolinski B, Simons FE, Wickman M, Annesi-Maesano I, Baena-Cagnani CE, Bergmann KC, Bindslev-Jensen C, Casale TB, Chiriac A, Cruz AA, Dubakiene R, Durham SR, Fokkens WJ, Gerth-van-Wijk R, Kalayci O, Kowalski ML, Mari A, Mullol J, Nazamova-Baranova L, O'Hehir RE, Ohta K, Panzner P, Passalacqua G, Ring J, Rogala B, Romano A, Ryan D, Schmid-Grendelmeier P, Todo-Bom A, Valenta R, Woehrl S, Yusuf OM, Zuberbier T, Demoly P, Global Allergy and Asthma European Network, Allergic Rhinitis and its Impact on Asthma. Practical guide to skin prick tests in allergy to aeroallergens. *Allergy*. 2012 Jan;67(1):18-24. [PubMed](#)

Dolen W. Skin testing techniques. *Immunol Allergy Clin N Am*. 2001;21(2):273.

Grier TJ, Hazelhurst DM, Duncan EA, Esch RE. Stability, compatibility and cross-reactivities of allergens: immunochemical reactivities and practical considerations. Lenoir (NC): Greer; 2001.

Moore M, Tucker M, Grier T, Quinn J. Effects of summer mailing on in vivo and in vitro relative potencies of standardized timothy grass extract. *Ann Allergy Asthma Immunol.* 2010 Feb;104(2):147-51. [PubMed](#)

Nelson HS, Ikle D, Buchmeier A. Studies of allergen extract stability: the effects of dilution and mixing. *J Allergy Clin Immunol.* 1996 Aug;98(2):382-8. [PubMed](#)

Nelson HS, Knoetzer J, Bucher B. Effect of distance between sites and region of the body on results of skin prick tests. *J Allergy Clin Immunol.* 1996 Feb;97(2):596-601. [PubMed](#)

Nelson HS. Variables in allergy skin testing. *Immunol Allergy Clin N Am.* 2001;21(2):281-90.

Nolte HN, Kowal K, DuBuske L, Bochner BS, Wood RA, Feldweg AM. Overview of skin testing for allergic disease. *Up to Date (serial online)*; 2012.

Oppenheimer J, Nelson HS. Skin testing. *Ann Allergy Asthma Immunol.* 2006 Feb;96(2 Suppl 1):S6-12. [38 references] [PubMed](#)

Seibert SM, King TS, Kline D, Mende C, Craig T. Reliability of skin test results when read at different time points. *Allergy Asthma Proc.* 2011 May-Jun;32(3):203-5. [PubMed](#)

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Use of best practice in storage of extracts and technique of administration for allergy testing and immunotherapy administration

Potential Harms

Not stated

Qualifying Statements

Qualifying Statements

This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.

Implementation of the Guideline

Description of Implementation Strategy

Applicability Issues

The following may need to be in place for successful implementation of these recommendations:

- A standardized evidence-based process
- Staff educated to best practice
- Proficiency testing, as appropriate
- Refrigeration with continuous temperature monitoring, within close proximity to the care area
- Information regarding proper refrigeration during transport by patients to their primary care physician

Implementation Tools

Audit Criteria/Indicators

Patient Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Cincinnati Children's Hospital Medical Center. Best evidence statement (BEST). Allergy testing and immunotherapy administration. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2013 Apr 8. 5 p. [12 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2013 Apr 8

Guideline Developer(s)

Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

Source(s) of Funding

No external funding was received for development of this Best Evidence Statement (BEST).

Guideline Committee

Not stated

Composition of Group That Authored the Guideline

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Support/Consultant: Patti Besuner, RN, MN, CPNP, Evidence-Based Practice Mentor

Ad Hoc/Content Reviewer: H. Kalra, MD, Allergy Specialist

Financial Disclosures/Conflicts of Interest

Conflicts of interest were declared for each team member. No financial or intellectual conflicts of interest were found.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the [Cincinnati Children's Hospital Medical Center Web site](#) .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

Availability of Companion Documents

The following are available:

- Judging the strength of a recommendation. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2009 May 7. 1 p. Available from the [Cincinnati Children's Hospital Medical Center \(CCHMC\) Web site](#) .
- Grading a body of evidence to answer a clinical question. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2009 May 7. 1 p. Available from the [CCHMC Web site](#) .
- Table of evidence levels. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2009 May 7. 1 p. Available from the [CCHMC Web site](#) .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

In addition, suggested process or outcome measures are available in the [original guideline document](#) .

Patient Resources

The following is available:

- Health topics. Allergy testing for children. Cincinnati Children's Hospital Medical Center; 2012 Jul. Available from the [Cincinnati Children's Hospital Medical Center Web Site](#) .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

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